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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/424,660	01/27/1999	WOLFGANG BECKER	PM265122	8310

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT

PAPER NUMBER

1762

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/424,660

Applicant(s)

Becker et al

Examiner

Katherine A. Bareford

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jan 7, 2002
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14, 16, and 18-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

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Continued Prosecution Application

1. The request filed on Sept. 6, 2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/424,660 is acceptable and a CPA has been established. An action on the CPA follows.

The Examiner notes that the request for a CPA also requested a three month suspension, which has now expired.

2. The Examiner notes that an amendment was filed on Dec. 6, 2001, and a supplemental amendment was filed of Jan. 7, 2002. These amendments have been received and entered.

Specification

3. The title of the invention is now descriptive.

Claim Rejections - 35 USC § 112

4. The rejection of claims under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn due to applicant's amendments and arguments.

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Claim Rejections - 35 USC § 102

5. The rejection of claim 12 under 35 U.S.C. 102(e) as being anticipated by Shiraishi et al (US 5939130) is withdrawn due to applicant's amendments.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 14 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 59-15141424 (hereinafter '424).

'424 teaches a method and apparatus for applying a layer of a viscous fluid onto a planar substrate. Abstract and figure. The viscous fluid (resist) is provided to a dosing arm (nozzle 4) positioned over the substrate. Abstract and figure. A layer is formed on the substrate by dosing the substrate with fluid from the dosing arm. Abstract and figure. The substrate is rotated with a rotary drive. Abstract and figure. A thickness of the first layer formed on the first substrate is controlled by controlling the rotary speed of the rotary drive in response to the temperature of the viscous fluid. Abstract and figure.

Claim 22: the fluid is a coating. Abstract and figure.

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Claim 24: the apparatus for applying the layer includes a dosing arm, a plate that supports the substrate, a rotary drive that rotates the plate and a controller. Abstract and figure. The controller controls the thickness by controlling the rotary speed of the rotary drive in response to the temperature of the viscous fluid. Abstract and figure.

'424 teaches all the features of these claims except the pump that pumps the viscous fluid and the lacquer (claim 23).

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '424 to use a dosing pump to supply the fluid to the dosing arm with an expectation of similar results, because '424 teaches that fluid is supplied to the dosing arm during the process, and it is the Examiner's position that a dosing pump is a conventional method for supplying fluid to a dosing arm in the art of spin coating wafers. Furthermore, it would have been obvious that the coating fluid applied could be lacquer with an expectation of similar results, because it is the Examiner's position that lacquer and resist have similar properties and the desire to be coated with controlled thickness.

8. Claims 14, 16, 20-24, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 706 178 A2 (hereinafter '178) in view of Japan 59-151424 (hereinafter '424).

'178 teaches a method and apparatus for applying a layer of a viscous fluid onto a substrate. Column 11, line 40 through column 12, line 20 and figures 3A - 3C. The viscous fluid

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(resin bonding material) is provided to a dosing arm (nozzle) positioned over the substrate.

Column 11, line 40 through column 12, line 20 and figures 3A - 3C. A layer is formed on the substrate by dosing the substrate with fluid from the dosing arm. Column 11, line 40 through column 12, line 20 and figures 3A - 3C. The substrate is rotated with a rotary drive. Column 11, lines 40-55 and figures 3A - 3C. The amount of fluid and rotation of the substrate is controlled. Column 11, lines 40-55.

Claim 16: the fluid is a bonding material for bonding a second substrate to the first substrate. Column 11, lines 40-55. The second substrate is positioned over the layer of viscous fluid formed on the first substrate. Column 11, line 40 through column 12, line 20 and figures 3A - 3C. Then the connected substrates are spun together to spin off excess fluid. Column 11, line 40 through column 12, line 20 and figures 3A - 3C.

Claim 20: the process makes optical storage disks. Column 5, lines 40-50.

Claim 21: the fluid is a bonding material. Column 11, lines 40-55.

Claim 22: the fluid is also a coating. Column 11, lines 40-55.

Claim 24: the apparatus for applying the layer includes a dosing arm and a rotary drive that rotates the substrate. Column 11, lines 40-55 and figure 3A.

Claim 26: a means to connect the first and second substrates is provided. Column 11, line 40 through column 12, line 20 and figures 3A - 3C. A means to rotate the connected substrates is provided. Column 11, line 40 through column 12, line 20 and figures 3A - 3C.

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'178 teaches all the features of these claims except the controller system for controlling the thickness of the viscous fluid on the substrate, the pump, and plate for holding the substrate, and the lacquer (claim 23).

However, '424 teaches a method and apparatus for applying a layer of a viscous fluid onto a planar substrate. Abstract and figure. The viscous fluid (resist) is provided to a dosing arm (nozzle 4) positioned over the substrate. Abstract and figure. A layer is formed on the substrate by dosing the substrate with fluid from the dosing arm. Abstract and figure. The substrate is rotated with a rotary drive. Abstract and figure. A thickness of the first layer formed on the first substrate is controlled by controlling the rotary speed of the rotary drive in response to the temperature of the viscous fluid. Abstract and figure.

Claim 22: the fluid is a coating. Abstract and figure.

Claim 24: the apparatus for applying the layer includes a dosing arm, a plate that supports the substrate, a rotary drive that rotates the plate and a controller. Abstract and figure. The controller controls the thickness by controlling the rotary speed of the rotary drive in response to the temperature of the viscous fluid. Abstract and figure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '178 to use the control system of '424 to control the thickness of the layer on the first substrate with an expectation of desirable results, because both references teach spin coating the substrate and '178 teaches a range of amounts of coating and rotation speeds of the substrate to be used and '424 teaches to control rotation speed and coating conditions to provide the

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desired coating thickness. It further would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '178 in view of '424 to use a dosing pump to supply the fluid to the dosing arm with an expectation of similar results, because '178 and '424 teach that fluid is supplied to the dosing arm during the process, and it is the Examiner's position that a dosing pump is a conventional method for supplying fluid to a dosing arm in the art of spin coating wafers. Furthermore, it would have been obvious that the coating fluid applied could be lacquer with an expectation of similar results, because it is the Examiner's position that lacquer and resist have similar properties and the desire to be coated with controlled thickness.

9. Claims 18, 19 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over '178 in view of '424 as applied to claims 14, 16, 20-24, and 26-28 above, and further in view of EP 595 749 A2 (hereinafter '749).

'178 in view of '424 teach all the features of these claims except the monitoring of the thickness of the layer and adjusting deviations of the thickness.

However, '749 teaches that when applying liquid resist to a wafer from a spray nozzle to form a thin film on the top surface of the wafer, it is conventionally known that the resist thickness resulting from the spin coating operation is dependent on the viscosity of the resist material and the spin speed. Page 2, line 55 through page 3, line 15. '749 further teaches to monitor the thickness applied liquid during the application and spinning process, so as to adjust to the desired thickness in situ. See page 3, lines 15-40.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify '178 in view of '424 to provide in situ measurement of coating thickness as suggested by '749 with an expectation of better thickness control, because '178 in view of '424 teaches applying coating to a substrate to be spun with control of thickness and '749 teaches controlling thickness using in situ measurement of coating thickness to help control the final coating results. It further would have been obvious to select desired tolerances/deviations in the coating thickness (including the depth), so that when to make changes would be clear.

10. The Examiner notes that EP 595 749 A2 and Japan 59-121424 (abstract) were provided with the information disclosure statement returned by the Examiner with the Rejection of July 19, 2000.

Response to Arguments

11. Applicant's arguments with respect to claims 14, 16 and 18-28 have been considered but are moot in view of the new ground(s) of rejection.

As to claims 14 and 22-24, the Examiner has cited the Japan 59-151424 reference in a 35 USC 103 (a) rejection as reading on the claims as now worded.

As to the claims 14, 16, 20-24, and 26-28, the Examiner has further rejected these claims under 35 U.S.C. 103(a) as being unpatentable over the newly cited EP 706 178 A2 reference in

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view of Japan 59-151424. '178 clearly indicates spinning the bonding liquid on the disk before it is connected to another disk.

As to the claims 18, 19 and 25, the Examiner has further rejected these claims under 35 U.S.C. 103(a) as being unpatentable over '178 in view of '424 as applied to claims 14, 16, 20-24, and 26-28 above, and further in view of EP 595 749 A2 , for the reasons given in the rejection above.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (703) 308-0078. The examiner can normally be reached on Monday-Thursday from 7:00 am to 4:30 pm. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck, can be reached on (703) 308-2333.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.


KATHERINE A. BAREFORD
PRIMARY EXAMINER
GROUP 1100/1700